[0115] According to yet another exemplary embodiment, there is provided an apparatus, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus to configure the protected part in a semi-static manner, and configure the uplink-downlink ratio of the non-protected part dynamically by setting it adaptively in a symbol specific manner.

[0116] According to yet another exemplary embodiment, there is provided an apparatus, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus to use a scalable frame duration to allow trade-off between guard period overhead and latency.

[0117] According to yet another exemplary embodiment, there is provided an apparatus, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus to use a scalable guard period length to allow trade-off between the guard period and latency.

[0118] According to yet another exemplary embodiment, there is provided an apparatus, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus to use a scalable guard period length to allow trade-off between timing advance requirements and latency.

[0119] According to yet another exemplary embodiment, there is provided an apparatus, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus to define a frame hierarchy in order to achieve fast and flexible uplink-downlink switching, wherein a master frame is of a normal frame format used in a cell, wherein uplink/downlink division of a protected part of the master frame is followed by each node in the cell, wherein if during an unprotected part of the master frame there is no other data transmission of higher priority, the unprotected part of the master frame is divided into local frames suitable for data transmission of lower priority, a local frame including a local frame specific downlink portion, guard period and uplink portion.

[0120] According to yet another exemplary embodiment, there is provided an apparatus, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus to apply a frame format on top of an LTE frame structure by defining the frame duration to be 1 ms or 0.5 ms, the apparatus having a capability to schedule and assign said frame format, replacing a subframe or slot corresponding to one or more consecutive subframes or slots.

[0121] According to yet another exemplary embodiment, there is provided an apparatus, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus to carry out scheduling dynamically or semi-statically based on a predefined pattern of subframes or slots.

[0122] According to yet another exemplary embodiment, there is provided an apparatus, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus to select a frame format to be applied, configure data transmission and reception based on said selecting, and signal information on the selected frame format to at least one network node.

[0123] According to yet another exemplary embodiment, there is provided a user equipment comprising at least one processor; and at least one memory including a computer program code, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the user equipment to apply a TDD data frame structure such that a TDD frame has a predefined frame duration defining a link direction 1-link direction 2 switching point periodicity, the frame duration defining a maximum time in which a half-duplex apparatus performs a cycle transmit-receive-transmit and/or a cycle receive-transmit-receive, wherein a link direction 1-link direction 2 ratio is adjustable on a symbol level in the TDD frame, wherein the TDD frame is partitioned into one or more of a guard period, a link direction 2 portion and a link direction 1 portion.

[0124] According to yet another exemplary embodiment, there is provided a user equipment, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the user equipment to receive information on a frame format selected in a network apparatus, and configure data transmission and data reception based on said selecting.

[0125] According to yet another exemplary embodiment, there is provided a computer program product comprising program code means adapted to perform any one of the method steps when the program is run on a computer.

[0126] It will be obvious to a person skilled in the art that, as the technology advances, the inventive concept can be implemented in various ways. The invention and its embodiments are not limited to the examples described above but may vary within the scope of the claims.

[0127] List of Abbreviations

[0128] AP access point

[0129] CP cyclic prefix

[0130] CTS clear-to-send

[0131] D2D device to device

[0132] AP2AP access to access point

[0133] DL downlink

[0134] DwPTS downlink pilot time slot

[0135] eNB enhanced node-B

[0136] FDD frequency division duplexing

[0137] GP guard period

[0138] LTE long term evolution

[0139] LTE-A LTE-advanced

[0140] RTS ready-to-send

[0141] RTT round trip time

[0142] TCP transmission control protocol

[0143] TDD time division duplexing

[0144] UE user equipment

[0145] UL uplink

[0146] UpPTS uplink pilot time slot

[0147] TTI transmission time interval

[0148] TD time division

[0149] OFDMA orthogonal frequency division multiple access

[0150] HARQ hybrid automatic repeat request

[0151] WLAN wireless local area network

[0152] tx transmitter

[0153] rx receiver

1. A method for selecting a frame format in a communications system, the method comprising:

predefining, in a communications apparatus, a TDD data frame structure such that a TDD frame has a predefined frame duration defining a link direction 1-link direction 2 switching point periodicity, the frame duration defining a maximum time in which a half-duplex apparatus